

3 monitor/control section includes a cryptographic-  
4 processing-status monitor/control section for  
5 monitoring/controlling a cryptographic-processing status of  
6 voice data transmitted over the communication network.

1 10. A communication-status notification apparatus  
2 according to claim 9, wherein  
3 said cryptographic-processing-status monitor/control  
4 section includes a cryptographic-processing section for  
5 cryptographic-processing voice data sent/received by the  
6 first gateway equipment, and  
7 said communication-status notification section is  
8 operable to notify the subscriber terminal of the  
9 cryptographic-processing status of voice data by said  
10 cryptographic-processing section.

1 11. A communication-status notification apparatus  
2 according to claim 10, wherein said cryptographic-  
3 processing section is operable to carry out at least one of  
4 scramble, encryption and interleave as a cryptographic  
5 process.

1 12. A communication-status notification apparatus  
2 according to claim 9, wherein  
3 said cryptographic-processing-status monitor/control  
4 section further includes a cryptographic-processing-status  
5 monitor section for monitoring a cryptographic-processing

6 status of voice data by second gateway equipment, which is  
7 connected to the communication network and serves as a  
8 companion to the first gateway equipment for voice data  
9 transmission, based on a transmission status of packets  
10 between the first gateway equipment and the second gateway  
11 equipment, and

12 said cryptographic-processing section is operable to  
13 carry out the cryptographic-processing in accordance with  
14 the cryptographic-processing status of the second gateway  
15 equipment monitored by said cryptographic-processing-status  
16 monitor section.

1 13. A communication-status notification apparatus  
2 for a communication system in which at least one subscriber  
3 terminal is connected to an communication network via first  
4 gateway equipment, serving to create/analyze a packet as a  
5 voice data transmission medium, so that the subscriber  
6 terminal sends/receives voice data over the communication  
7 network, said apparatus being adapted to be incorporated in  
8 the first gateway equipment and comprising:

9 a request analysis section for discriminating whether  
10 or not voice data received by the first gateway equipment  
11 from the subscriber terminal contains a request on  
12 monitoring/controlling or notifying a communication status  
13 in the communication network, and for analyzing the content  
14 of said request contained in the voice data received from  
15 the subscriber terminal;

16 a communication-status monitor/control section,  
17 responsive to the content of said request analyzed by said  
18 request analysis section, for monitoring/controlling the  
19 communication status of the communication network, based on  
20 the processing status of the voice data in the first  
21 gateway equipment; and

22 a communication-status notification section,  
23 responsive to the content of said request analyzed by said  
24 request analysis section, for notifying the subscriber  
25 terminal of the communication status monitored/controlled  
26 by said communication-status monitor/control section via  
27 the first gateway equipment.

1 14. A communication-status notification apparatus  
2 according to claim 13, wherein when the content of said  
3 request analyzed by said request analysis section is  
4 related with starting or stopping of the notification of  
5 the communication status, said communication-status  
6 notification section is operable to start or stop the  
7 notification of the communication status according to the  
8 content of said request.

1 15. A communication-status notification apparatus  
2 according to claim 13, wherein when the content of said  
3 request analyzed by said request analysis section is  
4 related with selecting of a kind of the communication  
5 status to be notified, said communication-status

6 notification section is operable to notify the subscriber  
7 terminal of the selected kind of the communication status  
8 according to the content of said request.

1 16. A communication-status notification apparatus  
2 according to claim 13, wherein said communication-status  
3 notification section includes a notification-material  
4 storage section for storing at least one of voice,  
5 character and image as notification materials, and is  
6 operable to carry out the notification of communication  
7 status, using the notification materials stored in said  
8 notification-material storage section.

1 17. A communication-status notification apparatus  
2 according to claim 13, wherein said communication-status  
3 monitor/control section includes a traffic-status  
4 monitor/control section for monitoring/controlling a  
5 traffic status in the communication network, based on a  
6 sending/receiving status of packets in the first gateway  
7 equipment.

1 18. A communication-status notification apparatus  
2 according to claim 17, wherein said traffic-status  
3 monitor/control section includes:  
4 a traffic-information request section for requesting  
5 each of one or more routers, which are included in the  
6 communication network, to send to the first gateway

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7 equipment information about the traffic status in each said  
8 router, by transmitting a request signal to each said  
9 router via the first gateway equipment;

10 a traffic-information obtaining section for obtaining  
11 the information about the traffic status, which has been  
12 sent from each said router in response to the request  
13 signal transmitted by said traffic-information request  
14 section, out of various data received by the first gateway  
15 equipment; and

16 a traffic-status analysis section for analyzing the  
17 traffic status of the communication network based on the  
18 traffic-status information obtained by said traffic-  
19 information obtaining section.

1 19. A communication-status notification apparatus  
2 according to claim 17, wherein said traffic-status  
3 monitor/control section includes:

4 a test-packet sending section for sending one or more  
5 test packets via the first gateway equipment to second  
6 gateway equipment, which is connected to the communication  
7 network and serves as a companion with the first gateway  
8 equipment for voice data transmission;

9 a test-packet retrieving section for retrieving the  
10 individual test packet, which has been sent back from the  
11 second gateway equipment, out of packets received by the  
12 first gateway equipment; and

13 a traffic-status analysis section for analyzing the

14 traffic status of the communication network, based on the  
15 retrieving status of the test packets by said test-packet  
16 retrieving section.

1 20. A communication-status notification apparatus  
2 according to claim 17, wherein  
3 said traffic-status monitor/control section includes  
4 a communication-quality evaluation section for evaluating  
5 communication quality of voice data transmitted over the  
6 communication network, based on the traffic status  
7 monitored by said traffic-status monitor/control section,  
8 and

9 said communication-status notification section is  
10 operable to notify the subscriber terminal of information  
11 about the communication quality of voice data evaluated by  
12 said communication-quality evaluation section.

1 21. A communication-status notification apparatus  
2 according to claim 20, wherein said traffic-status  
3 monitor/control section further includes a band-alteration  
4 request section, responsive to the communication quality of  
5 voice data evaluated by said communication-quality  
6 evaluation section, for requesting each of one or more  
7 routers, which are included in the communication network,  
8 to alter a band to be used for voice data transmission, by  
9 transmitting a request signal to each said router via the  
10 first gateway equipment.

1           22. A communication-status notification apparatus  
2     according to claim 13, wherein said communication-status  
3     monitor/control section includes a cryptographic-  
4     processing-status monitor/control section for  
5     monitoring/controlling a cryptographic-processing status of  
6     voice data transmitted over the communication network.

1           23. A communication-status notification apparatus  
2     according to claim 22, wherein  
3         said cryptographic-processing-status monitor/control  
4     section includes a cryptographic-processing section for  
5     cryptographic-processing voice data sent/received by the  
6     first gateway equipment, and  
7         said communication-status notification section is  
8     operable to notify the subscriber terminal of the  
9     cryptographic-processing status of voice data by said  
10    cryptographic-processing section.

1           24. A communication-status notification apparatus  
2     according to claim 23, wherein said cryptographic-  
3     processing section is operable to carry out at least one of  
4     scramble, encryption and interleave as a cryptographic  
5     process.

1           25. A communication-status notification apparatus  
2     according to claim 22, wherein

3           said cryptographic-processing-status monitor/control  
4       section further includes a cryptographic-processing-status  
5       monitor section for monitoring a cryptographic-processing  
6       status of voice data by second gateway equipment, which is  
7       connected to the communication network and serves as a  
8       companion with the first gateway equipment for voice data  
9       transmission, based on a transmission status of packets  
10      between the first gateway equipment and the second gateway  
11      equipment, and

12           said cryptographic-processing section is operable to  
13      carry out the cryptographic-processing in accordance with  
14      the cryptographic-processing status of the second gateway  
15      equipment monitored by said cryptographic-processing-status  
16      monitor section.

1           26. A communication-status display apparatus for a  
2      communication system in which at least one subscriber  
3      terminal is connected to a communication network via  
4      gateway equipment, serving to create/analyze a packet as a  
5      voice data transmission medium, so that the subscriber  
6      terminal sends/receives voice data over the communication  
7      network, and also serving to monitor/control a  
8      communication status in the communication network so as to  
9      notify the subscriber terminal of information about the  
10     monitored/controlled communication status, said apparatus  
11     being adapted to be incorporated in the subscriber terminal  
12     and comprising:



13           a notified-information detection section for  
14     detecting information about the communication status of the  
15     communication network, which status is monitored/controlled  
16     by the gateway equipment, when the subscriber terminal is  
17     notified of the communication-status information from the  
18     gateway equipment;

19           a display-material storage section for storing at  
20     least one of voice, character and image as display  
21     materials; and

22           a communication-status display section for displaying  
23     the communication status of the communication network,  
24     based on the communication-status information detected by  
25     said notified-information detection section, using said  
26     display materials stored in said display-material storage  
27     section.

1           27. A communication-status notification method for  
2     notifying at least one subscriber terminal of a  
3     communication status in a communication network of a  
4     communication system in which the subscriber terminal is  
5     connected to the communication network via gateway  
6     equipment, serving to create/analyze a packet as a voice  
7     data transmission medium, so that the subscriber terminal  
8     sends/receives voice data over the communication network,  
9     said method being carried out at the gateway equipment and  
10    comprising the steps of:

11           (a) monitoring/controlling the communication status

12 of the communication network, based on a processing status  
13 of voice data in the gateway equipment; and  
14 (b) notifying the subscriber terminal of the  
15 communication status monitored/controlled in said step (a).

1 28. A communication-status notification method for  
2 notifying at least one subscriber terminal of a  
3 communication status in a communication network of a  
4 communication system in which the subscriber terminal is  
5 connected to the communication network via gateway  
6 equipment, serving to create/analyze a packet as a voice  
7 data transmission medium, so that the subscriber terminal  
8 sends/receives voice data over the communication network,  
9 said method comprising the steps of:

10 at the subscriber terminal,

11 (a) sending to the gateway equipment a request on  
12 monitoring/controlling or notifying of a communication  
13 status of the communication network, said request being  
14 contained in voice data transmitted over the communication  
15 network;

16 at the gateway equipment,

17 (b) discriminating whether or not voice data received  
18 from the subscriber terminal contains said request sent by  
19 the subscriber terminal in said step (a) and, when the  
20 voice data received from the subscriber terminal contains  
21 said request, analyzing the content of said request  
22 contained in the voice data;

23 (c) in response to the content of said request  
24 analyzed in said step (b), monitoring/controlling the  
25 communication status of the communication network, based on  
26 a processing status of the voice data in the gateway  
27 equipment; and

28 (d) in response to the content of said request  
29 analyzed in said step (b), notifying the subscriber  
30 terminal of the communication status monitored/controlled  
31 in said step (c).

1 29. A recording medium, in which a communication-  
2 status notification program is recorded, for use in gateway  
3 equipment of a communication system in which at least one  
4 subscriber terminal is connected to a communication network  
5 via the gateway equipment, serving to create/analyze a  
6 packet as a voice data transmission medium, so that the  
7 subscriber terminal sends/receives voice data over the  
8 communication network, wherein said program instructs the  
9 gateway equipment to function as the following:

10 means for monitoring/controlling a communication  
11 status in the communication network, based on a processing  
12 status of voice data in the gateway equipment; and

13 means for notifying the subscriber terminal of the  
14 communication status of the communication network, which is  
15 monitored/controlled by said monitoring/controlling means,  
16 via the gateway equipment.

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1           30. A recording medium, in which a communication-  
2 status notification program is recorded, for use in a  
3 gateway equipment of a communication system in which at  
4 least one subscriber terminal is connected to a  
5 communication network via the gateway equipment, serving to  
6 create/analyze a packet as a voice data transmission medium,  
7 so that the subscriber terminal sends/receives voice data  
8 over the communication network, wherein said program  
9 instructs the gateway equipment to function as the  
10 following:

11           means for discriminating whether or not voice data  
12 received by the gateway equipment from the subscriber  
13 terminal contains a request on monitoring/controlling or  
14 notifying of a communication status in the communication  
15 network, and for analyzing the content of said request  
16 contained in the voice data received from the subscriber  
17 terminal;

18           means, responsive to the content of said request  
19 analyzed by said discriminating and analyzing means, for  
20 monitoring/controlling the communication status of the  
21 communication network, based on the processing status of  
22 the voice data in the gateway equipment; and

23           means, responsive to the content of said request  
24 analyzed by said discriminating and analyzing means, for  
25 notifying the subscriber terminal of the communication  
26 status, which is monitored/controlled by said  
27 monitoring/controlling means, via the gateway equipment.

